

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1. (Original) A proximity detector, comprising:

a magnetic-field-to-voltage transducer for providing a magnetic field signal indicative of an ambient magnetic field;

a peak detector responsive to said magnetic field signal for providing a tracking signal which substantially follows at least a portion of said magnetic field signal, wherein said peak detector comprises:

a first digital-to-analog converter for providing a first output signal having a first step size;

a second digital-to-analog converter for providing a second output signal having a second step size larger than said first step size; and

a summation circuit coupled to said first and said second digital-to-analog converters for providing said tracking signal as a sum of said first and said second output signals.

2. (Currently Amended) The proximity detector of Claim 1, further including a too-far-behind comparator for providing a too-far-behind signal which changes state when said magnetic field signal varies from said tracking signal by a predetermined amount, wherein said tracking signal is controlled in response to said too-far-behind signal to include steps associated with the first step size when the too-far-behind signal is in a first state and to include larger steps associated with the second step size when the too-far-behind signal is in a second state.

3. (Original) The proximity detector of Claim 2, wherein said peak detector further comprises:
a first counter for providing a first count signal to said first digital-to-analog converter;
and

4 a second counter for providing a second count signal to said second digital-to-analog
5 converter.

1 4. (Currently Amended) The proximity detector of Claim 3, wherein in response to thea first
2 state of said too-far-behind signal said second counter is stepped in association with a terminal
3 count of said first counter, and in response to thea second state of said too-far-behind signal said
4 second counter is also stepped.

1 5. (Original) The proximity detector of Claim 2, wherein said too-far-behind comparator is
2 responsive to an offset signal that differs from said magnetic field signal by an offset amount.

1 6. (Currently Amended) The proximity detector of Claim 1, further including a POSCOMP
2 comparator for providing a POSCOMP signal[,] which changes state when said magnetic field
3 signal varies from said tracking signal by a predetermined amount, wherein at least one of said
4 tracking signal ~~and-or~~ said magnetic field signal is forced towards the other one of said tracking
5 signal ~~and-or~~ said magnetic field signal in response to changes in state of said POSCOMP signal.

1 7. (Original) The proximity detector of Claim 6, wherein said POSCOMP comparator is
2 responsive to a threshold signal that differs from said tracking signal by a predetermined amount.

1 8. (Original) The proximity detector of Claim 6, wherein said tracking signal is brought to
2 substantially the same level as said magnetic field signal in response to changes in state of said
3 POSCOMP signal.

1 9. (Original) The proximity detector of Claim 6, wherein said magnetic field signal is brought
2 to substantially the same level as said tracking signal in response to changes in state of said
3 POSCOMP signal.

1 10. (Original) A method for detecting a ferrous article comprising the steps of:
2 generating a magnetic field signal indicative of an ambient magnetic field;

3 generating a tracking signal which substantially follows at least a portion of said
4 magnetic field signal;
5 generating a too-far-behind signal which changes state when said magnetic field signal
6 varies from said tracking signal by a predetermined amount; and
7 changing step size of said tracking signal in response to ~~transitions~~ a change of state of
8 said too-far-behind signal.

1 11. (Original) The method of Claim 10, wherein said changing step size comprises:
2 generating a first output signal having a first step size with a first digital-to-analog
3 converter;
4 generating a second output signal having a second step size larger than said first step size
5 with a second digital-to-analog converter; and
6 summing said first and said second output signals to provide said tracking signal.

1 12. (Original) The method of Claim 11, wherein said changing step size comprises:
2 counting with a first counter for providing a first count signal to said first digital-to-
3 analog converter; and
4 counting with a second counter for providing a second count signal to said second digital-
5 to-analog converter, wherein in response to a first state of said too-far-behind signal said second
6 counter is stepped in association with a terminal count of said first counter, and in response to a
7 second state of said too-far-behind signal said second counter is also stepped.

1 13. (Currently Amended) The method of Claim 10, further including
2 generating a POSCOMP signal which changes state when said magnetic field signal
3 varies from said tracking signal by a predetermined amount; and
4 forcing at least one of said magnetic field signal ~~and~~ or said tracking signal towards the
5 other one of said magnetic field signal and said tracking in response to transitions of said
6 POSCOMP signal.

1 14. (Original) The method of Claim 13, wherein said POSCOMP signal changes state when a
2 threshold signal differs from said tracking signal by a predetermined amount.

1 15. (Original) The method of Claim 13, wherein said forcing step comprises bringing said
2 tracking signal to substantially the same level as said magnetic field signal in response to
3 transitions of said POSCOMP signal.

1 16. (Original) The method of Claim 13, wherein said forcing step comprises bringing said
2 magnetic field signal to substantially the same level as said tracking signal in response to
3 transitions of said POSCOMP signal.

1 17. (Original) The method of Claim 10, wherein said step of generating the tracking signal
2 comprises:
3 comparing said magnetic field signal to said tracking signal to generate said POSCOMP
4 signal;
5 counting with first and second counters in response to said POSCOMP signal to provide
6 first and second count signals; and
7 converting said first and second count signals to said tracking signal.

1 18. (Original) The method of Claim 17 further comprising generating a threshold signal at a
2 predetermined offset with respect to said tracking signal and using said threshold signal to
3 generate said POSCOMP signal.

1 19. (Original) The method of Claim 18, wherein said tracking signal level and said threshold
2 signal level are interchanged in response to transitions of said POSCOMP signal.